

ABSTRACT OF THE DISCLOSURE

According to the present invention, there is provided a semiconductor device including a trench gate IGBT, having:

- 5       a first semiconductor layer of a first conductivity type;
- a second semiconductor layer of a second conductivity type which is formed on one surface of the first semiconductor layer;
- a base layer of the first conductivity type which is formed in a surface portion of the second semiconductor layer;
- 10       emitter layers of the second conductivity type which are selectively formed in a surface portion of the base layer;
- a plurality of trenches which extend through the emitter layers and the base layer and are formed to a predetermined depth in the second semiconductor layer;
- 15       gate electrodes which are formed on gate insulating films in the trenches;
- an emitter electrode which is formed on the emitter layers and the base layer;
- a collector electrode which is formed on the other surface of the
- 20       first semiconductor layer;
- an auxiliary base layer of the first conductivity type which is formed in an arbitrary region between two adjacent trenches and is insulated from the emitter electrode; and
- a carrier discharge electrode which contacts a surface of the
- 25       auxiliary base layer of the first conductivity type.